DOCUMENT RESUME

ED 111 077 95 EA 007 446

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TITLE An Introduction to Sample Surveys for Government Managers.
INSTITUTION Urban Inst., Washington, D.C.
SPONS AGENCY Department of Housing and Urban Development, Washington D.C.
REPORT NO UI-72-108-65
PUB DATE Mar 71
NOTE 47p.
AVAILABLE FROM Publications Office, The Urban Institute, 2100 M Street, N. W., Washington, D. C. 20037 (Order No. URI-30003, $1.50)

EDRS PRICE MF-$0.76 HC-$1.95 Plus Postage
DESCRIPTORS *Administrator Guides; Administrator Role; Bibliographies; Community Surveys; *Estimated Costs; Government Employees; Government Role; Research Methodology; *Sampling; *Statistical Surveys; Tables (Data)

ABSTRACT

This report is intended to provide government managers with some perspective on the nature and implications of sample surveys, their likely costs, and what can be expected from them. The authors discuss sample surveys less from the technical side than from the perspective of the officials who will make management decisions about an overall survey. Little attention is devoted to specific research methods, though the bibliography lists publications that provide such information. Much of the discussion applies to surveys in which government employees, rather than private citizens, supply the responses. Separate chapters discuss the overall sample survey process and the steps involved; the advantages of conducting a survey under government auspices, rather than through a university or private research organization; the costs involved in each phase of a survey; factors affecting the accuracy of a survey; and some further considerations in conducting a survey. The appendix contains tables that illustrate costs of conducting sample surveys of different types and scope. (Author/JG)

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an introduction to SAMPLE SURVEYS for government managers

Carol H. Weiss

Harry P. Hatry

In Cooperation With

The Council of State Governments
The International City Management Association
The National Association of Counties
The National Governors' Conference
The National League of Cities
The United States Conference of Mayors

The Urban Institute
Washington, D. C.

March 1971

EA 007 446

The work forming the basis for this publication was conducted pursuant to a contract with the Department of Housing and Urban Development. The views expressed are those of the authors and do not necessarily represent the views of the Urban Institute or the Department of Housing and Development.

REFER TO URI - 30003 WHEN ORDERING.

ISNB No. 87766-015-8
Library of Congress Catalog Card No. 79-160422
UI 72-108-65 1971

Available from:

Publications Office
The Urban Institute
2100 M Street, N.W.
Washington, D. C. 20037

List price: $1.50

Printed in the United States of America

B/74/1M

Summary

Sample surveys are likely to be extremely useful to state and local government managers in the years ahead. Their uses for many purposes seem destined to grow rapidly. This report provides guidance to government officials who are considering the use of surveys for planning and management. It recommends the basic strategy of sampling so that the needs of the total population can be estimated from a relatively small number of cases. Surveys can provide indications of citizen attitudes and perceptions and various factual data not readily available through other means. Surveys can be a way for local governments to better reflect citizen needs and desires. This can be one important aspect of citizen participation.

Cost is a critical restriction in the use of surveys by local governments. This report discusses the cost factors and provides rough estimates of the costs of personal interviews (three sample sizes), mail surveys and telephone surveys under specific sets of assumptions. The attempt throughout is to present "bargain basement" costs. Also, ways are suggested for reducing costs through such means as telephone interviews, mail questionnaires, volunteer interviewers, contributions of expert services by university or civic groups (in the direction, design and analysis of the survey program), and the tapping of available federal funds.

Another major aspect of surveys is the accuracy of the survey results. Too often, decisions are made concerning the type of survey and the specific information to be sought without considering the likely accuracy of the results. Factors affecting survey accuracy are discussed, including the balance between cost and accuracy.

Suggestions are made for assuring that survey findings will be useful to decision makers, for keeping the data confidential, for avoiding sensitive questions where possible, for avoiding implications in the surveys that there will be fast improvement in services and thus stirring unrealistic citizen expectations, and for dealing with problems in interviewing in low-income minority areas that may have been saturated with surveys.

Acknowledgments

This report was prepared by Carol H. Weiss, Consultant to The Urban Institute and Research Associate at the Bureau of Applied Social Research, Columbia University, and Harry P. Hatry of The Urban Institute. Helpful suggestions were received from Picot Floyd, City Manager of Savannah, Georgia; Pearl Zinner, National Opinion Research Center; and Garth Buchanan, Marvin Burt, Harold Guthrie, Alfred Schwartz and Richard Zamoff, of The Urban Institute staff.

The authors are particularly grateful to Paul McClenon of the RAND Corporation and Albert Mindlin, Director of Statistical Services, District of Columbia, for their intensive review of an earlier draft.

"Are you (a) contented, (b) happy, (c) very happy, (d) wildly happy, (e) deliriously happy?"

Drawing by H. Martin © 1970 The New Yorker Magazine, Inc.

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I. Introduction

This report is intended to provide government managers with some perspective on the nature and implications of sample surveys, their likely costs, and what can be expected from them. Periodic surveys of citizens' perceptions, attitudes, needs, activities, and priorities regarding government services are a potentially powerful tool for both local and state governments. They can help determine the adequacy of public services and provide guidance on how to improve these services.

This report is part of an Urban Institute series on "Measuring the Effectiveness of Local Government Services." Those completed, on solid waste collection and recreation services, and others in preparation give instances where information from sample surveys can help governments determine how effective their services are. Such surveys can provide both citizen attitude information, which indicates how effective citizens perceive their services to be, and factual data. Exhibit 1 indicates how factual data (Measure 1) and opinions (Measure 4) obtained from a sample survey might be used. Sample survey data, if properly constructed, can be used with other data to indicate how satisfactory a service is. As Exhibit 1 indicates, survey data can be collected to compare neighborhoods or other clientele groups with each other and over time.

Some examples of information, not readily available through other means, that may be obtained from properly formulated sample surveys are:

--Citizen attitudes toward various types of taxes.

--Citizen awareness of the availability of various municipal services.

--Rates of citizen victimization to provide improved information on total crime (and not merely reported crime).

--Citizen feelings of security from crime in various portions of the community.

--Housing conditions.

--Number of different persons or families using and not using public transportation, and their reasons.

--Transportation delay times and travel times (door-to-door times as well as times for each mode).

--Number of different persons or families using and not using various recreational facilities, and their reasons.

EXHIBIT 1

ILLUSTRATIVE SUMMARY OF SELECTED ANNUAL RECREATION DATA

Measures of Effectiveness	Neighborhood (current year)									Whole city	
	I	II	III	IV	V	VI	VII	VIII	IX	Current year	Previous year
(1) - Percent of persons who did not participate during the year in government sponsored recreation activities	15%	25%	25%	70%	10%	60%	5%	70%	80%	40%	50%
2 - Percent of persons not within 15 minutes of a park or playground	6%	8%	10%	8%	7%	21%	3%	16%	22%	11%	14%
3 - Total number of severe injuries	4	0	2	3	1	3	1	4	7	25	32
(4) - Percent of persons rating overall recreation opportunities as either "not so good" or "no good at all."	10%	7%	5%	18%	14%	30%	5%	12%	25%	12%	12%

Notes: a. Measures 1 and 4 could be derived from sample surveys. The data might be obtained as part of an annual citizen attitude survey covering many functions or might be obtained by separately sampling persons in the community on recreation. (See the Recreation paper referred to below for more details.)

b. This table is drawn from "Measuring the Effectiveness of Local Government Services: Recreation," The Urban Institute, 1971, p. 19.

--Number of sick days and use of medical services and facilities.

--Citizen perceptions of the adequacy of particular services, such as solid waste collection.

--Citizen perceptions of the courtesy of city employees.

--Citizen perceptions of the effectiveness of city employees in handling complaints.

Surveys can also be an effective channel for a kind of citizen participation in government. The survey interview gives citizens a chance to "talk" to city hall with anonymity. It permits citizens, at least those sampled, to make their preferences and displeasures known and in a way that can be constructively used by the government. Citizens are likely to welcome the opportunity to voice their concerns, particularly when effective action follows the survey. However, if action is not forthcoming, later surveys may meet with apathy, if not outright noncooperation.

Sample surveys are generally best for local governments. A complete survey of the entire population in a community is too costly and time-consuming and, surprisingly, not likely to increase the accuracy of the results. Sampling techniques using relatively small numbers of respondents are reasonably precise, provided strict procedures are maintained. Complete coverage is likely to mean less experienced and less competent interviewers, possibly less care in call-backs or location of missing individuals, and other "quick and dirty" shortcuts or improvisations. Sample surveys may provide information accurate enough for most purposes. Samples of 1000 or 500 or even less will often provide sufficient precision for many uses. Note, for example, that the Gallup and Harris polls normally survey approximately 1500 persons to represent nationwide opinion.

Where relevant, information from surveys can be used in connection with data available from other sources. Official records, for example, often provide useful information that supplements and amplifies survey data. It also becomes possible to cross-analyze sets of data against each other.

When a time dimension is added, there is even greater pay-off. One of the prime purposes of citizen surveys can be to identify changes over time. If old issues die and are replaced by new ones, new questions can, of course, be added.

The following discussion looks at sample surveys less from the technical side than from the perspective of the officials who will make management decisions about the overall survey. Little guidance on specific research methods and techniques is given. Publications on research methodology provide such information; the bibliography gives some suggestions for further study.

The following sections discuss: (1) the overall sample survey process and the steps involved, (2) the advantages of conducting surveys under government auspices versus contracting with a university, private research organization, or consultant, (3) the costs in each phase of the survey, (4) questions of accuracy, and (5) some further considerations.

Much of the discussion applies to sample surveys in which government employees, rather than private citizens, provide the responses (for example, inspections by health department medical personnel of health conditions).[1]

Currently, local governments infrequently use sample surveys, but their use is growing. The federal government uses them to obtain national health statistics and between-census unemployment and earnings data. At the local level, such surveys have played a part in transportation studies, in the Model Cities program, and in Community Renewal Program studies.

[1]This report deals largely with surveys of citizens, but much of the discussion also applies to sampling government records. In practice, much valuable but otherwise too costly, and therefore inaccessible, information is available by sampling operating records. This can be a very important resource for a government's planning and evaluation activities if the record information is reasonably up to date, accurate, and relevant.

II. The Survey Process

Good surveys involve many steps that must be taken in the proper sequence. The following list and brief description of basic steps may serve as a check list for carrying out the survey process:

1. Determine the objectives. For what purposes is information needed? At least roughly, what degree of accuracy is needed?

2. Define the population groups to be studied. Are they, for example, tenants or homeowners, or both? Workers or residents? Those age 21 years and over, or 18 and over?

3. Determine the specific data to be collected and the methods of measurement. Should reports of behavior be used or values or opinions? Should information on health be obtained by asking people or from clinical records? Can data already developed in other studies be used or modified for the present purposes?

4. Choose the sampling unit. Should it be the household, the individual, or the city block? What size of sample is needed? What should be done about nonresponses? Which sampling method is most appropriate and feasible?[1]

5. Determine the method of contacting individuals. Should there be personal interviews, mailed questionnaires, or telephone calls? Should interviews be conducted in specific facilities, such as health clinics or schools, or at home?

6. Construct the questionnaire to obtain the desired information.

7. Organize and carry out the interviews. This includes hiring interviewers and supervisors, training interviewers, field testing the questionnaire and adjusting as necessary, assigning interviews, checking on completion and quality of work, collecting and editing interview schedules, and dealing with nonresponses and refusals.

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[1] On occasion, it is useful to return to the same respondents in subsequent surveys. "Panel" surveys may entail added costs in locating the same people over a period of time and there are inevitable losses in panel members. But these panel studies have advantages, such as identifying patterns of activity over time, specifying which kinds of respondents change or remain the same, and following up recipients of certain services.

8. Process and analyze the data. This includes coding, keypunching, tabulating, constructing indices, running cross-tabulations, and using appropriate statistical methods to specify relationships and significance.

9. Report the results, indicating implications and recommendations for action.

Conscientious officials will pay close attention to the survey during the planning phases. They should attempt to identify as clearly as possible what uses they want the information to serve. If decision makers are hazy or imprecise about the kind of information they need and from whom they want it, the survey director can go far astray. His miscalculations of what the decision makers want may not be caught until the interview schedule is printed, the interviewers are in the field, or even until the data are in. Correction becomes a costly process.

Knowing the intended use of the data (1) enables the survey director to develop the most appropriate questions and indicators, and (2) gives him an idea of how much accuracy is required. Many questions raised by the survey director to clarify his tasks may sound like nit-picking. ("Shall we ask for information on members of the household who are currently on duty in the armed forces?") But they can be important in collecting useful data and in comparing data from year to year. The most fruitful procedure is for survey staff and officials to engage in give-and-take discussion to determine the most practical and useful survey design.

For some surveys the data may need to be quite accurate, say within 5 percent. But often wider tolerance is permissible when only large differences in response would affect the action prescribed. Under these circumstances, relatively large errors can be tolerated without undermining the survey's purposes, and a more economical survey (smaller sample size) can be run.

This, of course, does not imply that sloppy procedures are permissible, such as using untrained interviewers or poorly worded questions. Nor should it be an excuse for bias--systematic errors that push the data in one direction. (For example, a transit analysis should not survey only women who are home during the day, thus under-representing low-income and working women.)

III. Who Should Do the Survey?

Local governments frequently are uncertain whether to run surveys themselves or to contract them out to more experienced organizations or individuals (particularly for the work described in steps 4 through 8 of the previous section). Some guidelines may help resolve this choice.

Advantages of a Permanent In-House Survey Staff

If surveys are to be conducted regularly, there are advantages in developing the capacity to run them within the governmental structure.

A permanent staff insures continuity of effort from year to year. Over the long run, this is likely to keep costs down.

This core of people, concerned with consistency, can produce findings that permit meaningful comparisons over time.

To the extent the top elective and appointive officials want to encourage their departments or divisions to make greater use of surveys, the creation of an in-house staff underscores the seriousness of the government's commitment.

A byproduct of a permanent staff is that the talents possessed by survey specialists can and should be of considerable assistance to other units of the government that deal with the development, collection, analysis and use of the data.

Reasons for Contracting Out Survey Tasks

Sample surveys need to be conducted by professionally trained personnel. Either salary levels or other conditions of local government employment may make it difficult to attract capable professionals.

Survey work tends to be of a periodic nature in most local governments with much of the auxiliary staff required only part time. Civil service regulations make it difficult in some places to hire the temporary help for positions such as interviewers.

University research groups and commercial survey firms are among the organizations whose capabilities and costs may be explored as a viable alternative to an in-house survey staff. Cooperative arrangements between the government and local college or university can benefit both.

Credibility may be an important reason to use an external organization. On sensitive issues where the survey results are to be used as guides for public action but where people might assume that the local government's own survey would be slanted, it can be advantageous to choose a respected and independent survey organization.

Employing consultants often is advisable for help in organizing and carrying out early surveys before the local government develops its own proficiency. These consultants, further, may be called on to help recruit and develop a permanent staff inside the government which would gradually take over the survey operations.

Final Responsibility

Whether the technical survey work is done by the government's own staff, by outside organizations, or by a combination of both, it must be stressed that officials within the government must bear the primary responsibility. They can neither duck nor delegate the basic decisions on what kinds of data are needed, how often, from whom, and with what precisions.

IV. Characteristics and Costs

Cost is a primary factor constraining local governments today from using surveys. The major costs in sample surveys are listed in Exhibit 2.

Many factors affect costs, making it difficult to provide "typical" cost estimates. Moreover, prices change from year to year (mostly upward) and vary considerably in different locations in the United States. Government officials should get up-to-date information from a nearby survey operation, such as a local health survey, model cities survey, transportation study, community renewal program study, health or welfare survey. However, as a general guide, some specific estimates of survey costs are provided in the Appendix. Each main form of interviewing (personal interview, mail, and telephone) and their respective costs are discussed here. The costs of surveying records are not estimated but would, in general, be substantially lower since interviewing, the most expensive element, is unnecessary.

1. The Personal Interview

Personal interviews are desirable when (1) the subject matter is complex, (2) the inquiry is long, (3) the survey seeks unstructured, open-ended information, or (4) answers from a sufficient number of respondents are not otherwise likely.

The survey costs of the personal interview are affected by a number of factors. Many of these factors also apply to mail and telephone surveys and are not repeated in those discussions. Rough estimates of the costs of personal interview surveys, based on particular sets of conditions, are in Sections A and B of the Appendix.

a. Experience

A government that has no prior experience or expertise in surveys will incur extra starting costs. Expert guidance is needed to avoid pitfalls. When the government staff gains experience and knowledge, these costs should not recur. If periodic surveys are undertaken in order to measure trends, the later survey costs will be much less than the initial costs.

b. Availability of an adequate population listing.

The costs of an adequate population listing vary considerably, depending upon the status of present lists and the work required to make them accurate and complete.

EXHIBIT 2

COST ELEMENTS IN SAMPLE SURVEYS BY FUNCTION

1. Overall survey planning, design, and direction.
2. Listing the units (blocks, households, individuals, businesses) to be sampled.
3. Selecting the sample, preparing maps, instructions, and assignment schedules.
4. Developing the interview questionnaire and schedule (including pretest costs for interviewing and travel).
5. Printing questionnaires, training materials, instruction manuals.
6. Interviewing.
   a. Recruiting and selecting interviewers.
   b. Interviewer training (trainer, training materials, plus interviewer time).
   c. Contacting and interviewing, calling back, locating missing respondents.
   d. Field supervision.
   e. Travel (time and expenses).
7. Editing, coding, keypunching, tabulating, computing, and if used, computer time.
8. Telephoning, especially if a survey is by telephone or if interviews are validated by telephone.
9. Mailing, particularly if a survey is by mail, or when explanations, introductions, and appointments are made by mail.
10. Analyzing data and report writing.
11. Reproducing the report.

In order to draw a sample from a population (or "universe"), the survey director needs a list of that population. Population lists may consist of blocks, buildings, housing units, households, and individuals. An up-to-date city address directory can be a good source if it is complete, accurate, and lists all the dwelling units of the population with which the survey is concerned. Other lists--taxpayers, utility users, voters--are useful if they do not exclude persons who should be in the population to be sampled. Even if they are not complete, they can be used to supplement and check other lists.

If existing lists are out of date, members of the survey team may have to enumerate dwelling units themselves. Interviewers, with maps and assigned territories, might list all dwelling units on each block. This means not only homes and apartments, but trailers in trailer camps, rooms in lodging houses, living quarters behind stores. At the very least, if it is not feasible to correct the deficiency, the nature and direction of potential bias should be identified and reported.

Sometimes a survey is concerned not with the total population but with some selected segment, such as males 16 to 21 years. If possible, all people with these characteristics should be listed. Often this is beyond the realm of possibility. A workable substitute is to draw a sample from the total universe of households and through "screening" interviews to locate the households which contain members with the requisite characteristics.

c. The size of the sample.

Size is probably the most critical single determinant of survey costs. Costs increase significantly with sample size. The size of the sample depends upon the degree of precision desired. It is necessary to consider not only the total sample, but subgroups for which data are to be reported (males and females, whites and blacks, persons under and over 45 years, the major parts of town). The sample sizes for the subgroups of concern have to be large enough so that the results can be used with confidence. This is discussed at greater length in Section V on "Accuracy."

d. Type of sample.

There are different ways of sampling, and their costs vary.

Simple random sampling involves drawing units at random from the whole population. A table of random numbers (which is readily available) is traditionally used.

Stratified random sampling involves drawing samples separately from subgroups of the universe (white males, white females, nonwhite males, nonwhite females).

Cluster sampling can reduce costs because batches of people who live near each other are selected, thus reducing travel time. However, for a given sample size, there is somewhat less confidence in the findings.

In order to reach the best trade-off between cost savings and accuracy, an expert's advice is a good investment.

e. Interviewing.

Survey organizations by mid-1970 were paying professional interviewers from $2.00 to $3.00 an hour. Interviewing time includes not only actual interviewing hours but time spent in training, pretesting questionnaires, reading instructions, traveling, locating and contacting respondents, recopying scrawled interviews, and turning in completed schedules to the office.

Further costs associated with interviewing are the time and money spent for recruiting and selecting the interviewers and for trainers and supervisors. Sometimes a validation check is made, a follow-up of a sample of respondents by telephone or in person to find out whether they were actually interviewed and gave the responses listed. Cheating and gross errors are detailed, and the field supervisor eliminates unsatisfactory interviewers.

The length of the interview affects costs. Length is affected by the number, type, and complexity of questions, and the number of topics covered. In research studies, interviews tend to run one to two hours.[1] Government surveys generally take less time. If straightforward data are sought and not too many topics are in one interview, 30 to 40 minutes is reasonable. However, free-response questions increase time. With free-response questions respondents are encouraged to reply in their own words rather than giving yes-no, true-false or short answers. For some survey purposes it is essential that respondents express themselves fully to avoid putting words or interpretations in their mouths.

Other factors affecting interviewing costs are:

--Productivity (number of interviews completed per hour), depending on the interviewers' ability, experience and motivation.

--Time spent for call-backs to respondents who were not at home on the first calls. Procedures should limit the number of attempts to reach any one respondent (three is a common limit).

--Neighborhood being surveyed. In some areas, costs go up because residents refuse to open their doors to strangers, pairs of interviewers are needed for security reasons, housing or population listings are inadequate, and so forth.

--Travel time and costs between interviews, and from interview locations to the survey office.

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[1] One study flaunted its eight-hour interview with school superintendents.

--Financial payment to respondents. Most experienced survey researchers frown on paying respondents for participating, except as a last resort, but some advocate it.

f. Editing, coding, and tabulation of interview questionnaires.

After completion, the interview questionnaires are checked for internal consistencies ("edited"), verbal answers are converted into numbered classifications ("coded"), and the responses typically are put onto punch cards. It might seem more economical to tabulate answers by hand if the number of interviews is small; however, machine data processing costs are not high, particularly if the government already has tabulating equipment. Hand tallies use up considerable clerical time. Furthermore, machine processing is almost inevitably faster, more accurate and more economical for significant numbers of tabulations (such as for analysis of responses by the respondents' age, neighborhood of residence, or by attitude on other questions).

Costs relate directly to the sample size and the number and complexity of questions. Answers that allow easy coding (male/female, age at last birthday, approve/disapprove) take little time, whereas long narrative responses to "experiences I have had with the police" or "suggestions for improving health care" require the development of careful classifications and then the cross-checking of different coders' decisions on classification.

After data for more than one year have been collected, the city will probably want to compare responses over time.

g. Analysis and interpretation of results.

Analytic cost is often overlooked, but unless survey data are analyzed, interpreted, and made available to local decision-makers, the previous steps are wasted.

The initial step in analysis is the tabulation of the number of people, and the percent of the total, who give each specific answer. These findings can then be compared to (1) previous similar surveys, (2) surveys on other topics (percentage of people satisfied with recreational services compared to percentage satisifed with garbage collection), and (3) similar surveys in other jurisdictions.

Further, answers can be broken down by relevant population characteristics--men compared to women, young to older persons, whites to blacks, or newcomers to older residents. Responses tabulated by combinations of these characteristics (young male newcomers) may provide further useful information.

In addition, answers given on one question can be related to answers given on other questions. For example, it may be instructive to analyze answers to a question on satisfaction with health services

in terms of respondents' replies to questions on the types of health services they used.

One good rule of thumb is to use as variables for analysis those factors that can be changed by the government. That is, it is more practical to study the effects of factors that can be altered than to look into the effects of relatively unchangeable attributes.

On important topics, answers to a number of questions can be combined into indices (by factor analysis, scaling, etc.) and used for further analyses. Without going further into issues of multivariate analysis, it can be said that the possibilities (and the costs) of analysis can increase almost without limit. If one purpose of a survey is to uncover causal relationships (what conditions lead to what attitudes, actions, or conditions), sophisticated analysis is vital. More limited analysis will suffice to discover the present state of attitudes or the level of current activity.

For more detailed discussion of the analysis process, several of the references in the bibliography provide good discussions.

2. The Mail Survey.

The mail questionnaire is the least costly survey method. A rough estimate of mail survey costs to a local government, based on one particular set of conditions, is in Section C of the Appendix. The mail survey can deal with a wide range of questions. If it is well conceived, clearly worded, and calls for fixed-alternative (multiple choice) answers that are appropriate and easy to check, even people with little education can respond. The 1970 Census relied mainly on mail returns.

The major problem with mail questionnaires is that not everybody returns them. Returns range from 5 to 98 percent, depending on the interest of the topic, the population queried, and the relevance and length of the questionnaire. Compared with the typical response rate of 80 to 90 percent for interview surveys, mail response rates for the general population rarely exceed 50 percent without extensive follow-up. A low rate of return requires that data be treated with considerable skepticism in terms of their representativeness. The nonrespondents may differ from the respondents in important but unspecified ways. The results consequently are not representative of the population. Some studies have found that those with extreme views are more apt to respond while older and less-educated people and women are less apt to return questionnaires. (This conflicts with the experiences of many city halls where verbal complaints are received from older women.)

Returns can be boosted to relatively high levels by intensive efforts (such as letter or telephone follow-ups). A recent report showed mail returns of 70 percent and over when follow-ups were used.[1] Of course these

[1] Joseph R. Hochstim and Demetrios A. Athanasopoulos, "Personal Follow-Up in a Mail Survey: Its Contribution and Its Cost," Public Opinion Quarterly, Spring 1970, Vol. 34, pp. 69-81.

extra efforts push up costs, while making the respondent group more representative. Hochstim, for example, gives the costs of his 1965 mail study as $37,000 for 5,630 initially returned questionnaires (70 percent of the sample), or $6.55 per return. A personal interview follow-up raised his return rate to 86 percent. These additional returns cost $13.65 each. It is instructive to note that $10,000 went for supervision, training, record keeping, and office work, $5,200 for listing of addresses, and $11,300 for enumeration of households. The questionnaires and mailing cost only $6,600.

Obtaining mail addresses for all units to be sampled is another difficult and costly task.

Some investigators have cut mailing costs by sending questionnaires with other mailings, such as utility bills. While this cost-saving device has some merit, it also has limitations: (1) the mailing list may not include all the people that the survey aims to reach (or to sample) and may include others not appropriate for the survey, and, (2) the replies may be emotionally colored by the other items in the envelope. Also, mailing costs are usually minor compared to those for planning, design, direction, accurate enumeration, and so forth.

The potential cost savings will tempt governments to survey by mail, particularly as part of regular business, such as utility billings. However, because of the dangers described, at least a sample of the nonrespondents should be reached to determine whether their views differ as a class from those of the respondents. Probably, a sample of at least 50 personal interviews (either at home or by telephone) should be included.

3. The Telephone Survey

The telephone interview has much to recommend it. Compared to the personal interview, travel is eliminated and costs reduced. An estimate of telephone survey costs, for one particular set of conditions, is in Section D of the Appendix. If no one answers, call-backs are possible at different times. Respondents tend to be about as willing to talk and as candid as in personal interviews. Furthermore, if calls are made from a central location, supervisors can listen in and correct faulty interviewing styles on the spot.

Since not everybody has a telephone, this type of interview imposes sampling limitations that may be inconsistent with the purposes of the survey. It is impossible to rely exclusively on survey by telephone, particularly if poor people are to be interviewed, for the data will be severely biased by exclusion of the most deprived. The telephone is probably ruled out for studies of welfare clients, for example.

In some localities, particularly in cities, many people have unlisted telephone numbers. A recent investigation shows that, contrary to popular belief, these people are primarily middle-income, not high-income, and are

disproportionately black. Survey firms have been devising special procedures, such as random dialing, to reach them.[1] Also, some families have multiple listings (both home and office, both husband and wife, teen-age children) thereby giving them a higher probability of entering the sample. The procedures for a telephone survey should take such factors into account.

No one has yet documented the maximum length of an interview feasible by telephone. Without face-to-face contact there would seem to be limits to how long the respondent's attention can be sustained.

4. Cost-Saving Devices.

Volunteer interviewers can bring considerable savings. Sometimes members of civic or women's clubs, college students, or retired persons can be recruited. Also, an arrangement with a nearby college to use the survey as "field experience" for a course in research methods, or for a faculty member's own research project, may produce willing hands and possibly expert supervision as well.

Sometimes government personnel are used to interview. This is economical, but there should be sufficient time for training and field work, there should be no conflicts of interest (public health nurses asking residents about city health services), and it should be clear who is responsible for their supervision.

As already indicated, survey costs may be cut by using telephones or mail instead of household interviews when the disadvantages of the cheaper methods are not critical.

Governments may be able to fund at least part of the costs of sample surveys through federal programs. Among the potential sources are three Department of Housing and Urban Development programs--Community Renewal, Model Cities, and "701" Comprehensive Planning Assistance programs--the Department of Transportation's highway planning program (perhaps in cooperation with a regional planning body); and the Law Enforcement Assistance Administration's planning grants. Local foundations are other possible contributors to surveys.

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[1] See, for example, #7, Selected Bibliography.

V. Accuracy

Government managers must also be concerned with the accuracy of survey information that enters into their program and policy decisions.

In any survey there are numerous chances for inaccuracy. Some inaccuracies relate to human error, and would be present whether the survey were conducted by sampling or by total coverage. These may be called nonsampling errors. Statistical formulas will not show ahead of time how seriously these errors affect the data. Only painstaking care will control them.

When only a portion of the population is surveyed and is used to represent a total population, another source of uncertainty arises. But with statistical random sampling, good estimates can be made as to how precise the findings are.

Inaccuracies stemming from the use of samples will be discussed in detail, followed by an accounting of nonsampling survey errors.

Possible Sources of Error from Use of Samples

1. Total Population Relative to Sample Size.

As the size of the sample approximates the size of the total population, accuracy goes up. In most practical situations, however, the sample size is small relative to the total population. In these cases, the size of the population does not significantly affect the statistical precision of the sample. The absolute number in the sample is the dominant factor. Thus, reliable samples of the total population of the United States can run under 2,000. (As noted earlier, the Gallup and Harris polls survey about 1,500 persons to represent nationwide opinion.)

2. Size of the Sample.

The basic rule of sampling is that each unit (household, individual, city block, or school) must have an equal chance of being sampled.[1]

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[1]In stratified sampling (see Section IV.1.d), different rates of sampling may be used for different subgroups. However, members within each subgroup must have an equal chance of being selected.

Exhibits 3 and 4 illustrate the relationship between sample size and precision for random samples.[1] Tables such as these are needed to indicate to survey users the magnitude of the risk in accepting sampling findings. For example, given a sample size of 500, if 20 percent of the respondents give a particular answer, the chances are about 95 out of 100 that the true percentage in the total population that would give this answer lies between 16.5 and 23.5 percent. To put it another way, there is a 5-in-100 chance that the true percentage lies outside this range. Confidence intervals can also be computed for measures such as age and income, where averages, not percentages, are to be estimated.

Note that once the sample is reasonably large, increasing the sample size has only modest impact on precision. Note that even in the most imprecise category of answers shown in Exhibit 3 (50 percent responding alike) doubling the sample size from 500 to 1,000 reduces the confidence limits by only 2.4 percentage points.

Very small samples may seriously distort results. Increasing the size of the sample increases the precision of survey results, but above a certain point the increases in precision become increasingly minor. It is surprising how often relatively small samples provide sufficiently reliable estimates for total population parameters for many, if not most, purposes.

The size of the sample depends upon the degree of precision that is desired, balanced against cost constraints. It is necessary to consider not only the total sample, but also the number and likely size of the subgroups for which the data will be reported (males/females, whites/blacks). The sample size in each reported subgroup has to be large enough to keep the possible error in the estimate within allowable limits. This is discussed further in part (3) of this section.

Statisticians feel more comfortable with the 95 percent confidence intervals of Exhibit 3 than with lower ones. However, for many if not most local government uses of survey data, 90 percent confidence intervals (see Exhibit 4) may be quite appropriate and would permit smaller (and therefore less expensive) samples. For example, a sample of only 400 would be needed rather than 500 to provide the confidence intervals in Exhibit 3, but there would then be 90 rather than 95 chances out of 100 that the average response will fall within the indicated confidence limits.

Statisticians can explain the statistics of these confidence levels, but which level to seek--90 or 95 percent or some other--in a particular situation is primarily a policy question. Government managers should ask technicians to indicate the costs of achieving different levels of precision or accuracy, and then weigh these two factors to reach a final decision on the selection of the appropriate sampling size. A government's estimate of the seriousness of the added risks versus the added sampling costs is implicit in the selection of the appropriate sample size.

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[1]The term "accuracy" is used in this report to include both sampling and nonsampling errors. The term "precision," however, is used by statisticians to refer to sampling errors only.

EXHIBIT 3

RELATION BETWEEN SAMPLE SIZE AND PRECISION IN A SIMPLE RANDOM SAMPLE
95 Percent Confidence Intervals

If the percent giving the same answer to a question is..	And the Sample Size is: 50	100	200	400	500	1000
	Then there is a 95 out of 100 chance that the percent of the total population that would respond the same way would fall within these ranges:[a]					
2	0- 5.9	0- 4.7	0.1- 3.9	0.6- 3.4	0.8- 3.2	1.1- 2.9
5	0-11.1	0.7- 9.3	1.9- 8.1	2.8- 7.2	3.1- 6.9	3.6- 6.4
10	1.8-18.2	4.1-15.9	5.9-14.1	7.1-12.9	7.5-12.5	8.1-11.9
20	8.8-31.2	12.2-27.8	14.5-25.5	16.1-23.9	16.5-23.5	17.5-22.5
50	36.1-63.9	40.2-59.8	43.1-56.9	45.1-54.9	45.7-54.3	46.9-53.1

NOTES:
1. These apply if simple random sampling is used. If cluster sampling is used, the errors will be greater.
2. Nonsampling errors are not included.
3. These apply if the total population from which the sample is drawn is large relative to the sample size. If not, the accuracy of the sample estimate should be greater and therefore the ranges narrower than given in this table.

Source: Based on Reference 15 in the bibliography, p. 20 "Standard Error of an Estimate of a Proportion in Simple Random Sampling."

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[a] More precisely, if an infinite number of samples of indicated size were taken, 95 percent of them would contain the true value of the total population in the given confidence ranges.

EXHIBIT 4

RELATION BETWEEN SAMPLE SIZE AND PRECISION IN A SIMPLE RANDOM SAMPLE

90 Percent Confidence Intervals

If the percent giving the same answer to a question is..	And the Sample Size is: 50	100	200	400	500	1000
	Then there is a 90 out of 100 chance that the percent of the total population that would respond the same way would fall within these ranges.[a]					
2	0- 5.3	0- 4.3	0.4- 3.6	0.8- 3.2	1.0- 3.0	1.3- 3.7
5	0-10.1	1.9- 8.1	2.4- 7.6	3.2- 6.8	3.4- 6.6	3.8- 6.2
10	3.1-16.9	5.0-15.0	6.5-13.5	7.5-12.5	7.9-12.1	8.4-11.6
20	10.6-29.4	13.4-26.6	15.9-24.1	16.7-23.3	17.0-23.0	17.9-22.1
50	38.3-61.7	41.8-58.2	44.2-55.8	45.9-54.1	46.4-53.6	47.4-52.6

NOTES:
1. These apply if simple random sampling is used. If cluster sampling is used, the errors will be greater.
2. Nonsampling errors are not included.
3. These apply if the total population from which the sample is drawn is large relative to the sample size. If not, the accuracy of the sample estimate should be greater and therefore the ranges narrower than given in this table.

Source: Based on Reference 15 in the bibliography, p. 20 "Standard Error of an Estimate of a Proportion in Simple Random Sampling."

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[a]More precisely, if an infinite number of samples of indicated size were taken, 90 percent of them would contain the true value of the total population in the given confidence ranges.

3. Number of Subgroups for Which Data Are Reported.

There will be less precision for subgroups than for the total sample. Thus, if survey data is wanted that is analyzed separately by sex (male/female), ethnicity (white/black), and educational attainment (less than high school/high school or higher), there will be eight subgroups.

In analyzing subgroup data, either more "give" in the figures must be tolerated or a larger sample used. When the proportion of the population in one of the subgroups is very small (few white males with less than a high school diploma), a total sample of say 500 may yield too few persons to allow generalizations about the subgroup population. For example, if a certain response runs about 50 percent on a question for both a total sample of 500 and a subgroup of 50 respondents, the 95 percent confidence interval would be 46 to 54 percent for the total sample but about 36 to 64 percent for the subgroup (Exhibit 3).

It is often desirable to compare the responses of two subgroups. Suppose that in a survey of unemployment, the percentage of unemployed males in the sample is 5 and the percentage of unemployed females is 8. It may be important to know whether this is a real difference or whether the difference in the figures could have occurred by chance. If the sample size is too small, such differences could statistically have occurred by chance even when the true unemployment rate for both subgroups was the same. Special statistical tables are needed to compare the significance of the differences in responses between subgroups.

Nonsampling Errors

1. Interference With the Randomness of the Sample.

Factors that introduce an unknown bias, such as unknowingly increasing the probability that some persons are chosen over others, will make the sample less representative and consequently will introduce errors into the findings.

2. Accuracy of the Listing From Which the Sample Was Drawn.

The sample will be less representative if the list is not complete and up to date. For as long as the 1970 Census figures are up to date, local samples should conform to the ratios of age groups, racial characteristics, income levels, etc., indicated for the relevant census tracts, cities, counties or metropolitan areas.

3. Conceptualization and Wording of Survey Questions.

Writing a questionnaire or interview schedule might look simple. But the questions, wording, order, and even length can have important effects. In 1970 the Gallup and Harris polls obtained rather different responses to similar questions on Vietnam because of differences in a few words.

Furthermore, words have different meanings to different groups. Thus when asked if "hard work would help you get ahead," black women thought of "hard work" as jobs like scrubbing floors. Questions must be worded so that people of different education and background perceive common meanings. The only sure safeguard against misconceptions is careful pretesting to reduce ambiguities and misunderstandings--a vital step in every survey.

When results are to be compared from one period to another, the same wording of questions should be retained so that responses are comparable. Even minor changes in words can shift responses, as opinion polls have demonstrated.

The order in which questions are asked also has its effect. Early questions set the frame of reference for later questions and may focus the respondent's attention on matters already raised. Thus, if first asked about safety on playgrounds, and later about suggestions for improving playgrounds, many respondents will think in terms of improving playground safety--and fail to give other suggestions. Early questions provide cues to the respondent; he "learns" what, he thinks, the study wants to hear. Many people actually tend to give "acceptable" or "expected" answers, responding to these cues by tailoring their answers to fit the situation as they perceive it.

Thus, preparing survey questions requires experienced advice and careful pretesting.

4. Performance of the Interviewers.

Interviewers can introduce errors into the interview in many ways. They can fail to state the questions as written and substitute their own versions. They can misunderstand the answer, or hear it right and misrecord it. They can bias the respondents' answers by suggesting the "right" response by word, gesture, or facial expression. Meticulous attention must be given to training and supervising interviewers to avoid these fairly common errors.

5. Accuracy of Respondents.

Respondents may be inattentive, misunderstand the questions, or rattle off any answer to fob off an unwelcome interviewer. Sometimes they will have forgotten the information asked for, or miscalculate the time period specified ("number of visits to the doctor in the past year"). On occasion, they will withhold sensitive information or "dress it up" to sound more socially desirable.

The interviewer can minimize such errors by (1) encouraging respondents to give their own opinions by assuring them that there is no "right answer"; (2) maintaining a businesslike approach, rather than trying to establish a chummy, social relationship; and (3) motivating the respondent by clearly explaining how the data will be used.

6. Nonresponses.

Inevitably, interviewers are unable to contact everybody in the sample, and some people refuse to be interviewed. (In addition, a small number of people will be unsuitable because of illness, deafness, drunkenness, language difficulties or other reasons.) If the nonresponses are above, say, 15 to 25 percent, the representativeness of the responses and their comparability with data from other years can be seriously questioned. The conscientious survey team will redouble its efforts to reach not-at-homes by making personal or telephone calls on different days or hours, and to convert refusals into interviews by special explanations or offering gifts or cash payments. If such an effort is beyond existing financial resources, at least a small random sample of nonrespondents should be assiduously followed up to determine whether they differ in systematic ways from the respondent group. If they do differ, the survey results will have limited applicability. Either further sampling will be needed or the description of results must include necessary cautions about the bias.

7. Errors in Coding, Keypunching, and Tabulating.

Clerical errors will creep in. Most will be random and tend to cancel each other. But systematic checks will reduce the possibilities of noncompensating errors, such as consistent misclassifications.

Other Aspects of Accuracy

Small differences in percentages that show up in survey results have little significance because of sampling and nonsampling errors. For example, if 21 percent of a sample of 500 persons reported satisfaction with a particular service in one year, and 19 percent were satisfied the following year, the difference may reflect little more than variations in the sample or the survey procedures. Exhibits 3 or 4, though not the appropriate tables for comparing the two estimates in this example, do suggest a strong possibility that the true figure for the total population in both years may be roughly the same. Moreover, these tables consider only sampling error and none of the other errors which may affect the data drawn in different years.

Accuracy can be increased basically by increasing the size of the sample and by improving the competence of the conceptual, technical, and clerical work on the survey. The latter is likely to be more important than in making the sample design more sophisticated. While the potential array of errors looks imposing, there are ways to reduce almost every one. Even within a stringent budget, conscientious thought and work can reduce error to levels that make the data sufficiently accurate for most policy and management decisions.

VI. Further Considerations

1. Balance of Costs and Accuracy.

Both survey costs and desired accuracy affect a final decision on the size of a survey sampling effort. The kind of information that should be assembled to assist in such a decision for a specific survey is shown in Exhibit 5.

Ideally, the "penalties" of receiving information that has a certain statistical uncertainty should be compared with the cost burden of obtaining more precise information. Yet it would be misleading to suggest that the penalties and expenditures can easily be estimated. Even more difficult is the prediction of nonsampling errors and the costs associated with reducing them.

All that can be urged is that the survey staff do the best they can, learning from their own experience and from other survey teams, to estimate both cost and accuracy for several alternative survey designs. On the basis of such estimates, local government managers must consider how precisely they hope to rely on the survey information. Surveys that aim chiefly to show general trends should not involve unnecessary expenses for highly refined data. Other surveys that deal with highly sensitive issues should not risk avoidable inaccuracy. Only the policy maker or survey information user can judge whether cost or accuracy should take precedence in specific cases.

2. Need to Make Survey Findings Useful to Decision Makers.

The survey data should be presented in a form comprehensible to decision makers. Considerable care should be devoted to making results clear, interesting, persuasive, and relevant. To bridge the gap between survey data and future action, the survey staff should discuss the implications of their results and (where the data warrant) offer recommendations. It is also important to indicate clearly the bases in the data for these recommendations, and what assumptions are being made.

Survey reports are enhanced by (1) a short summary of the major findings and recommendations, (2) good, clear presentation, and (3) for those who want details, an appendix on the survey methods, including the questionnaire used and tables detailing the results.

EXHIBIT 5

COMPARISON OF COST AND ACCURACY LEVELS
FOR DIFFERENT SAMPLE SIZES AND METHODS
(rough approximations for illustrative purposes)

	COST LEVEL[a]		ACCURACY LEVEL[b]	
			The total population would differ from the sample by plus or minus the following percentage points for a confidence of:	
	Total	Approximate cost per response	95 percent	90 percent
Personnel interview				
Sample of 400	$ 9,925	$24.80	± 4.9	± 4.1
Sample of 500	11,325	22.65	± 4.3	± 3.6
Sample of 1,000	19,550	19.55	± 3.1	± 2.6
Telephone interview				
Sample of 500 (including 50 in-person interviews)[c]	8,510	17.00	± 4.3	± 3.6
Mail questionnaire				
2,000 mailed				
1,000 returned				
(supplemented by 50 telephone and/or in-person interviews)	8,475	8.10	d	d

[a]Costs are the estimated "moderate" costs in the Appendix and apply to the survey assumptions described there.

[b]Accuracy levels are the percentage points (+ or -) by which the sample percentage could differ from the "true" percentage in the population, if the reported percentage is about 40 to 60. (They are obtained from Exhibits 3 and 4.) Nonsampling errors are not considered here.

[c]If all assumptions of randomization have been met.

[d]Because of self-selective nature of returns, this difference will inevitably be greater than the earlier sampling tables indicate, but how serious this bias is, is very difficult to forecast.

3. Confidentiality.

The government must guarantee that individual replies on any topic are never divulged. This should be standard practice even in types of surveys (such as those proposed in The Urban Institute series on "Measuring the Effectiveness of Local Government Services"; see Introduction) which do not appear to deal with highly sensitive material. Any survey may include questions that people are reluctant to answer. For example, age, education, and especially income are private matters to many people. If these matters are not of great importance, they can be omitted or made less intrusive, for example, by calling for answers in ranges, "40 to 59 years old," "$6,000 to $7,999."

When a survey asks for criticisms of a governmental unit, the interviewer should make clear that the complainant will not be identified by name, address, or any other characteristic. Unless people are assured of anonymity, they may hesitate to speak.

Of course, promising confidentiality is not enough. Names should be removed from interview schedules after they have been checked and punch cards made carrying code numbers rather than names. Interviewers must understand that they are not at liberty to discuss respondents or to identify individuals. Data files always should be accessible only to the survey staff. If a respondent by some chance should give incriminating evidence, it should be held in as much confidence as his other interview replies.

4. Creation of Expectations.

Interviewing people about public services may lead them to believe improvements will be forthcoming. This is particularly likely, of course, if the survey receives much publicity, and cooperation is sought on the grounds that it will help improve public services. Governments should be wary of promising more than they can deliver. Survey purposes should be explained realistically. Of course, it would be ideal if public officials responded after the survey to indicated public desires for change with alacrity. This would create the best climate for surveys in the "long run."

5. Problems in Black Ghettos.

In recent years many low-income black neighborhoods have been subjected to study after study. Much has been promised on the basis of these studies, but relatively little has come to pass. Therefore, in some areas black citizens may be less willing than they once were to answer interview questions. To overcome this it should be stressed that no single group or neighborhood is singled out for study. It is important to inform them that they are included in community surveys because they are citizens and their opinions are sought with everyone else's.

6. "Indigenous Interviewers" as Bridge-Builders to the Community.

The use of interviewers similar to the people they interview in race or ethnicity, income level and neighborhood has become increasingly common in recent years. These "indigenous interviewers," it is often believed, generate greater trust, are more favorably received, better understand the language and mores of respondents, receive more accurate answers, and even make local neighborhoods feel that they are participants in the survey process rather than the victims of "outside snoops."

Professional researchers do not agree that all of these benefits--or even many of them--actually accrue. Experience and research suggest that accuracy is risked if interviewer and respondent are too much alike, or if they are too different. Where racial issues are not the survey topic, it has been found that middle-class white interviewers in black neighborhoods apparently complete as high a proportion of interviews and receive as candid answers as black interviewers. (However, there is evidence that on racially related issues different-race interviewers do not receive as honest answers.)

Matching interviewer and respondent by race or ethnic group also may be preferable if violence or barely suppressed antagonisms are prevalent. Obviously interviewers who speak the language are needed in foreign-speaking neighborhoods. Citizens in poor neighborhoods may see these interviewing jobs as desirable white-collar positions. Jobs may be created and useful skills learned if local people are hired as interviewers. Moreover, to the extent that local people as interviewers gives people in all neighborhoods a stake in the survey, the survey and its subsequent use for decision purposes will prosper.

7. Political Consequences.

Many city officials view statistical data and systematic survey information as mixed blessings. While they recognize the value of such information for planning and management, they are also mindful of the political consequences of public knowledge of the survey results. For example, release of periodic survey results that show increasing percentages of citizens dissatisfied with certain public services may harm the incumbent administration politically.

If surveys are conducted capably, their data on public services are neutral only in the sense that they are unbiased estimates of citizen facts and opinions; the information can be used equally well by whoever has access to it. Officials need not be deterred from using useful tools like surveys because their opponents can parade the less favorable information before the public. Over the long run, and even the short run, release of such information works in favor of rational public action. For example, it can provide potent support for needed government actions. Unless there is an unusually sensitive local issue (where information is not likely to be heard above the din of argument) or public officials are concerned only with their images and not the public welfare, knowledge is apt to be more useful than ignorance.

Appendix

The appendix tables and discussion illustrate some cost ranges based upon recent survey experience and other cost information that could be synthesized. The three cost estimates in Part A for personal interview surveys are based on the assumptions listed below about the nature of the surveys. These same assumptions, except for the "in-home personal interview" aspect of "approach," apply also to Parts C and D for mail and telephone surveys.

A. ILLUSTRATIVE PERSONAL INTERVIEW SURVEY COSTS

Assumptions[1]

Population of city or county - 200,000.

Approach - in-the-home personal interview with any adult member of the household.

Household listing - available but not completely up-to-date.

Interview training - 3 days of classwork and practice interviews with paid trainer.

Questions - 40 questions, 38 requiring short answers or multiple choice, 2 open-ended.

Interview time - average 30 to 40 minutes.

Survey planning, direction and analysis--by staff on permanent city/county payroll (or "volunteers," e.g., from nearby universities). If no staff (or volunteers) are available to plan, direct, and analyze findings, salary expense for survey staff should be written in (and can be prorated across the service areas being helped by the survey).

Elapsed time - if survey staff are experienced and there are no bottlenecks or red tape, three to six months from planning

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[1]The same interview can, and probably should, be used to collect information on a number of governmental services. Thus, costs can be divided among the agencies involved.

to report, for a first effort, ten months might be more realistic. (If more staff are assigned, elapsed times can be reduced.)

Costs are at 1971 levels.

Note that the relaxation of some of these assumptions, such as the use of a professional survey firm to plan, direct, and undertake the survey could raise these costs significantly.

1. COST ESTIMATES: 400 INTERVIEWS

	Low	Moderate	High (but not highest)
1. Overall planning and direction (see "Assumptions")	-	-	-
2. Preparing listing	$ 250	$1,000	$2,500
3. Selecting sample, preparing maps, assigning households to interviewers	100	400	1,000
4. Developing interview questionnaire (including conferences and 20 pretest interviews)	200	600	1,000
5. Printing interview questionnaires, training materials, manuals, supplies	200	550	950
6. Interviewing costs			
a) Recruitment	-	200	500
b) Training (20 interviewers for 20 hours, plus trainer's salary)	1,150	1,500	2,000
c) Interviewing time (including travel, call-backs, recopying)	2,000	3,450	5,600
d) Field supervision	600	850	1,500
e) Travel expenses	200	300	400
7. Editing, coding, punching, tabulating	350	700	1,100
8. Telephoning	- (no extra)	100	200
9. Mailing	10	25	100
10. Analyzing data and report writing (see "Assumptions")	-	150	500
11. Reproducing report	25	100	300
Total	$5,085	$9,925	$17,650
Average cost per interview	$12.71	$24.81	$44.13

Note: Some of the materials (training materials, household listings, maps), can be used for other surveys, and not all costs need be charged against the initial survey.

2. COST ESTIMATES: 500 INTERVIEWS

	Low	Moderate	High (but not highest)
1. Overall planning and direction (see "Assumptions")	-	-	-
2. Preparing listing	$ 250	$1,000	$2,500
3. Selecting sample, preparing maps, assigning households to interviewers	100	400	1,000
4. Developing interview questionnaire (including conferences and 20 pretest interviews)	200	600	1,000
5. Printing interview questionnaires, training materials, manuals, supplies	250	650	1,100
6. Interviewing costs			
a) Recruitment	-	200	500
b) Training (20 interviewers for 20 hours, plus trainer's salary)	1,150	1,500	2,000
c) Interviewing time (including travel, call-backs, recopying)	2,500	4,300	7,000
d) Field supervision	750	1,100	1,900
e) Travel expenses	250	400	500
7. Editing, coding, punching, tabulating	450	800	1,300
8. Telephoning	-	100	200
9. Mailing	10	25	100
10. Analyzing data and report writing (see "Assumptions")	-	150	500
11. Reproducing report	25	100	300
Total	$5,935	$11,325	$19,900
Average cost per interview	$11.87	$22.65	$39.80

Note: Some of the materials (training materials, household listings, maps), can be used for other surveys, and not all costs need be charged against the initial survey.

3. COST ESTIMATES: 1,000 INTERVIEWS

	Low	Moderate	High (but not highest)
1. Overall planning and direction (see "Assumptions")	-	-	-
2. Preparing listing	$ 250	$1,000	$2,500
3. Selecting sample, preparing maps, assigning households to interviewers	100	400	1,000
4. Developing interview questionnaire (including conferences and 20 pretest interviews)	200	600	1,000
5. Printing interview questionnaires, training materials, manuals supplies	400	1,000	1,600
6. Interviewing costs			
a) Recruitment	-	300	700
b) Training (40 interviewers for 20 hours plus trainer's salary)	2,300	3,000	4,000
c) Interviewing time	5,000	8,600	14,000
d) Field supervision	1,400	2,000	3,500
e) Travel expenses	500	800	1,000
7. Editing, coding, punching, tabulating	700	1,200	2,000
8. Telephoning	-	200	400
9. Mailing	20	50	200
10. Analyzing data and report writing (see "Assumptions")	-	300	800
11. Reproducing of report	25	100	300
Total	$10,895	$19,550	$33,000
Average cost per interview	$10.90	$19.55	$33.00

Note: Some of the materials (training materials, household listings, maps), can be used for other surveys, and not all costs need be charged against the initial survey.

B. EFFECTS OF DIFFERENT ASSUMPTIONS ON COST ESTIMATES

1. Size of City/County.

a. In a smaller city, such as one with a population of 50,000 to 100,000, the costs will not be significantly reduced. The size of sample needed for any given level of reliability will be very much the same as in a much larger city (Section V). The main savings will be in listing costs (fewer dwelling units), and travel time (if there are smaller distances). (However, a widely spread-out county of 100,000 may not even save on travel.) Total costs are not likely to run more than a few hundred dollars below the estimates in the previous tables.

In small cities and counties, the salary scales and the service costs may be lower, but this is by no means always the case. If a smaller city has lower cost levels, it should look at the columns marked "Low" for appropriate estimates.

b. Concomitantly, a larger city need not spend significantly more. Enumeration costs and preparation of maps will be more expensive (because of the larger area), and travel time and costs are likely to increase.

A heterogenous population may cause costs to increase. A large city is apt to have more subgroups about whom separate information is wanted (race, income level, section of city, length of residence). If this is the case, a larger sample size will be needed and interviewing costs will rise.

2. Survey Planning and Direction.

We have assumed that the government body would not incur added costs for survey planning and direction. Accordingly, not included in the illustrative cost estimates is much (in some cases, any) money for (1) overall planning and direction and (2) analysis of the data and writing the report. These are obviously critical to the survey, and require high levels of skill. We optimistically (probably over-optimistically) assume that some talent is available in or to the government (perhaps from staffs of planning, budget, or research functions or local universities) and that these people can be used part-year or part-time.

Another possibility is employing a regular survey director whose salary is prorated across all the functional areas served by the surveys. He may be able to locate within the government supplementary skills (sampling, questionnaire construction, field management, data processing, statistical analysis), and use appropriate people from other departments as part-time staff or consultants.

As indicated earlier, outside consultants may be needed at the outset of a survey operation. If civic-minded experts donate time, costs will be minimal, but regular consulting fees will cause cost estimates (at least at the beginning) to be higher than we have indicated.

Outside research firms' estimates of interviewing costs vary considerably. We recently asked eight large commercial and academic survey organizations for their rates. Their figures depend heavily on such things as interview length, whether any individual or a certain person (such as the head of household) in a household is acceptable, number of call-backs to not-at-homes, types of neighborhoods, sampling scheme, and so on. Some firms refused to estimate without detailed information on the job. In general, their figures tended to lie from $30 to $50 per interview, which included assistance with the development of the interview schedule, all the interviews, and coding and keypunching (but not analyzing) the data.

Most firms apparently prefer to err on the high side in their first estimate of survey costs, so perhaps a short and simple general-population interview would cost somewhat less. Also, these are old, established firms. Undoubtedly there are younger, more competitive local firms that will be less expensive. In all cases, a knowledgeable government official should monitor the survey to be sure it adheres to research standards.

C. COST ESTIMATES FOR MAIL QUESTIONNAIRE ("MODERATE")[a]

		For 2,000 questionnaires mailed
1.	Overall planning and direction (see "Assumptions")	-
2.	Preparing listing (see "Assumptions")	$1,500[b]
3.	Selecting sample, addressing labels	750[b]
4.	Developing questionnaire (including conferences and 30 pretest interviews)	600
5.	Printing questionnaires, cover letter, return envelopes, supplies	1,000
6.	Interviewing	
	a. Telephone follow-ups to nonreturners (approximately 1,200)	1,200
	b. Interviews with 50 nonreturners (to check whether they differ from questionnaire returners)	
	(1) by telephone (approximately 30)	300
	(2) in person (approximately 20)	350
7.	Editing, coding, punching, tabulating about 1,000 returned questionnaires)	1,200
8.	Telephoning	300
9.	Mailing, including one mail follow-up to nonreturners (approximately 1,500)	875
10.	Analyzing data and report writing (see "Assumptions")	300
11.	Reducing report	100
	Total	$8,475
	Average cost of the estimated 1,050 responses	$8.10

[a]This estimate assumes that about 500 of the 2,000 questionnaires are returned. Another mailing goes to the 1,500 nonreturners and about 300 more returns come in. Telephone calls are made to the 1,200 nonreturners to urge cooperation and 200 more responses are received by mail. A random sample of 50 is chosen from the 1,000 nonreturners and these are interviewed by telephone or in person.

[b]These costs could be reduced if the mailing was part of other government business. But note the limitations of this approach discussed in Section 2 of Chapter IV.

D. COST ESTIMATES FOR TELEPHONE INTERVIEWS ("MODERATE")

		For 500 telephone interviews[a]
1.	Overall planning and direction (see "Assumptions")	-
2.	Preparing listing	$ 500
3.	Selecting sample	300
4.	Developing interview questionnaire (including conferences, 20 pretest personal interviews, 10 pretest telephone interviews	600
5.	Reproducing interview questionnaires, training materials, manuals, supplies	650
6.	Interviewing costs	
	a. Recruitment	200
	b. Training (20 interviewers for 15 hours, plus salary of trainer)	1,000
	c. Interviewing time	1,900
	d. Supervision	800
	e. Supplementary in-person interviews for 50 persons without telephones or not answering	1,000
7.	Editing, coding, punching, tabulating	800
8.	Telephoning	500
9.	Mailing	10
10.	Analyzing data and report writing (see "Assumptions")	150
11.	Reproducing report	100
	Total	$8,510
	Average cost per interview	$17.00

[a]Supplemented by 50 in-person interviews of persons without phones or not answering.

Selected Bibliography

1. Blair, Louis; Hatry, Harry; and DonVito, Pasqual. Measuring the Effectiveness of Local Government Services: Solid Waste Collection. The Urban Institute, October 1970.

2. Glock, Charles Y., ed. Survey Research in the Social Sciences. New York: Russell Sage Foundation, 1967.

3. Hyman, Herman H. Survey Design and Analysis: Principles, Cases, and Procedures. Glencoe, Ill.: Free Press, 1955.

4. _____, et al. Interviewing in Social Research. University of Chicago Press, 1954.

5. Kahn, Robert and Cannell, Charles F. The Dynamics of Interviewing. New York: John Wiley & Sons, Inc., 1957.

6. Kish, Leslie. Survey Sampling. New York; John Wiley & Sons, Inc., 1965.

7. Kofron, John H., et al. Guidelines for Choosing between Long-Distance Telephone and Personal Interviewing, Philadelphia, Pa.: Chilton Research Services, 1969.

8. National League of Cities, Citizen Attitude Survey. Washington, D.C., June 1970.

9. Parten, Mildred. Surveys, Polls, and Samples: Practical Procedures, New York: Harper, 1950.

10. Selltiz, Claire, et al. Research Methods in Social Relations. New York: Holt, 1959.

11. Slonim, Morris J. Sampling in a Nutshell. New York: Simon & Schuster, 1960.

12. Stephan, Frederick F. and McCarthy, Philip J. Sampling Opinions: An Analysis of Survey Procedure. New York: John Wiley, 1958.

13. Sudman, Seymour. Reducing the Cost of Surveys. Chicago: Aldine, 1967.

14. U.S. Bureau of the Budget. Household Survey Manual, 1969.

15. U.S. Bureau of the Census. Supplemental Courses for Case Studies in Surveys and Censuses: Sampling Lectures. Washington, D.C.: Bureau of the Census, 1968.

Note: References 10, 11, 14, and 15 are particularly recommended for nontechnical readers.

SELECTED URBAN INSTITUTE PUBLICATIONS

Obtaining Citizen Feedback: The Application of Citizen Surveys to Local Governments (1973, URI 18000, $1.95) Kenneth Webb and Harry P. Hatry.

Practical Program Evaluation for State and Local Government Officials (1973, URI 17000, $1.95) Harry P. Hatry, Richard E. Winnie and Donald M. Fisk.

The Fiscal Impact of Residential and Commercial Development (1972, URI 22000, $3.00) Thomas Muller and Grace Dawson.

How Clean is Our City? A Guide for Measuring the Effectiveness of Solid Waste Collection Activities (1972, URI 10004, $1.95) Louis H. Blair and Alfred I. Schwartz.

Measuring the Effectiveness of Local Government Services: Transportation (1972, URI 16000, $1.95) Richard E. Winnie and Harry P. Hatry.

A Study in Comparative Urban Indicators: Conditions in 18 Large Metropolitan Areas (1972, URI 20006, $3.00) Michael J. Flax.

Governing Metropolitan Areas: A Critical Review of Councils of Government and the Federal Role (1972, URI 70004, $2.25) by Melvin B. Mogulof.

An Introduction to Sample Surveys for Government Managers (1971, URI 30003, $1.50) Carol H. Weiss and Harry P. Hatry.

Options for Improving the Care of Neglected and Dependent Children, Nashville-Davidson, Tennessee: Program Analysis Applied to Local Government (1971, URI 60001, $2.75) Marvin R. Burt and Louis H. Blair.

The Struggle to Bring Technology to the Cities (1971, URI 70001, $1.95)

Citizen Participation: The Local Perspective (1970, URI 80002, $3.00) Melvin B. Mogulof.

Federal Evaluation Policy: Analyzing the Effects of Public Programs (1970, URI 40001, $2.95) Joseph S. Wholey, John W. Scanlon, Hugh G. Duffy, James S. Fukumoto, Leona M. Vogt.

The Indianapolis Police Fleet Plan: An Example of Program Evaluation for Local Government (1970, URI 50002, $2.00) Donald M. Fisk.